NATURAL

Release Notes for Windows NT Version 4.1.1

NATURAL





This document applies to Natural Version 4.1.1 for Windows NT and to all subsequent releases. Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.
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Natural Version 4.1.1 Release Notes for Windows NT

The following topics are covered below:

- Introduction
- Prerequisites
- Documentation
- General Enhancements
- Natural Programming Enhancements
- New and Enhanced Natural Statements
- New and Enhanced Natural System Variables and System Commands
- New and Enhanced Natural Profile Parameters
- New and Enhanced Natural Utilities
- Example Library for New Features
- Compatibility / Removed Functionality
- Migrating Applications to Version 4.1
- Application Shell and Frame Gallery Usage
- Information Pertaining to Upcoming Natural Release
- Known Problems

Introduction

These Release Notes describe in summary form the enhancements and new features that are provided with Natural Version 4.1 for Windows NT.

In addition to providing the enhancements and new features described in these Release Notes, Natural Version 4.1 also consolidates all error corrections, modifications and enhancements provided with previous releases of Natural.

Prerequisites

Natural Version 4.1 requires Windows NT Version 4.0 SP5 for purposes of Year 2000 compatibility.

Documentation

A revised set of Natural documentation is provided with this release of Natural Version 4.1 for Windows NT. All enhancements and new features described in these Release Notes are fully documented in the Natural Version 4.1 documentation set.

The documentation is provided in HTML format for online access using a Web browser and also in PDF format for viewing/printing using Adobe Acrobat.

In addition to the extensive hyperlinks available for online access and navigation, a powerful online search facility is also provided.

With Natural 4.1, a comprehensive HTML-based online help facility is also provided. For example, you can invoke the Natural help facility using the F1 key.

Note: If an error message is received when using the F1 key for the first time, the help system of Windows NT must be updated. In this case, you will find on the Natural CD-ROM under the directory Help an update file (there are actually two update files available one for English and one for German). Start the appropriate update file for the language in use by double clicking on the file. This will update the online help as required. If you are using a language other than English or German, you will need to download the appropriate update file for the language in use from the Microsoft web page. The URL for this download is contained in the Readme file.

Please note that this documentation set and the associated online help are preliminary editions. A further enhanced documentation set and online help will be provided with the first SM release for Natural Version 4.1.

For a complete overview of the Natural 4.1 documentation set, see the Documentation Main Menu.

General Enhancements

The following general enhancements are provided with Natural 4.1:

- The Natural Studio
- Natural Configuration Utility
- Natural Dialog Services
- Natural Wheel Mouse Support
- NaturalX
- Natural Component Browser
- Natural Class Builder
- Natural Web Interface
- Natural Source Size
- Natural in Batch Mode
- Natural Debugger
- Natural Remote Procedure Call
- Natural Performance Enhancements

The Natural Studio

The Natural Studio provides modern user interface techniques for fast construction of Natural applications. These include:

- Full drag & drop / cut & paste support for all file operations such as import, export, copy or move
- In-place editing for creating new Natural libraries or classes with the class builder (dialogs, programs, etc.) and for renaming objects
- Dockable windows and tool bars with tool tips

For more information, see the Natural Studio.

Natural Configuration Utility

The Natural configuration and profile files are displayed in a tree structure. The profile parameters have been regrouped. The search functionality is now available using a tool bar combo box.

Natural Dialog Services

Natural Version 4.1 provides extensive enhancements within the graphical facilities for creating dialogs for event-driven Natural applications. These include:

- Table control
 - The color attributes and the DIL (dynamic information link) text can be defined at the cell level.
- Context menus
 - Context menus are now supported in Natural dialogs.
- New control: control box
 - A new general purpose control container is now supported.
- Nested controls
 - Certain controls in Natural dialogs are able to build a window hierarchy. This applies to ActiveX controls that have the "simple frame" style (like most tabbed dialog or property sheet controls), control boxes and optionally group frames.
- Event editing with the Program Editor
 The Program Editor can now be used to edit individual dialog or dialog element events.
- Multiple event editor instances can be active simultaneously.
- Property pages
 - ActiveX controls can be configured in the Dialog Editor using their property pages.
- Resources (private and shared)
 - Non-Natural files that are part of Natural applications ("shared resources") can be kept in Natural libraries together with the Natural modules that use them. Binary data related to a Natural dialog is stored in a "private resource" assigned to the dialog.

For more information, see the Dialog Editor and the Dialog Components.

Natural Wheel Mouse Support

Natural now supports vertical scrolling via rotation of the mouse wheel in all view windows for dialogs and maps at runtime, and for the source windows in the Natural debugger.

Note:

More advanced features, such as panning and autoscrolling, are not available if a suitable mouse driver is not installed. However, the Microsoft IntelliPoint driver, for example, provides an option called 'Universal scrolling', which makes panning of many of these windows possible. Please consult your wheel mouse documentation for further information.

NaturalX

The full functionality of NaturalX has been incorporated into Natural Version 4.1.

NaturalX enables you to create and distribute component based applications. Using Component technology (currently DCOM), NaturalX enables you to:

- allow your application components to be accessed by other components,
- execute these components on local and/or remote servers,
- access components written in a variety of programming languages across process and machine boundaries from within Natural programs,
- provide your existing Natural applications with (quasi) standardized interfaces.

For more information, see the NaturalX documentation.

Natural Component Browser

With Natural Version 4.1, the Natural Component Browser replaces the OLE Control Browser.

The Natural Component Browser displays ActiveX components and interfaces that can be used in NaturalX applications. The information is presented in a way that allows fast and efficient application development.

For more information, see the Natural Component Browser.

Natural Class Builder

The Natural Class Builder simplifies the creation and management of Natural classes. It is completely integrated into the new Natural Studio.

For more information, see the Natural Class Builder.

Natural Web Interface

The full functionality of Natural Web Interface has been incorporated into Natural Version 4.1.

Natural Web Interface is a link between a web server (more precisely: HTTP server) and your Natural environment. This can be on a separate server machine or on the same machine as the HTTP server (e.g. Netscape's Communication Server or Microsoft's IIS).

Contents of web pages can easily be created dynamically by a Natural program. This is a basis for implementing an interactive application on the web.

An interactive web-based application can receive input information and react by issuing output depending on that input. Examples of web-based applications are order entry systems, travel booking services and parcel tracking systems. This considerably increases the scope of Natural applications. Not only in-house users but also potential users/customers all over the world can now use the same application.

And best of all: Natural users do not have to learn a new programming language to implement such an application. Navigation and user input/output are implemented fully in Natural (with some additional embedded HTML statements).

For more information, see the Natural Web Interface documentation.

Natural Source Size

With Natural 4.1, the maximum size of a single source in Natural has been extended from approximately 128 KB to 1 MB.

This applies to all source types (programs, maps, dialogs, data areas, DDM sources, etc.).

Natural in Batch Mode

Natural Version 4.1 provides full batch mode support.

This means that Natural can be run as a background job. This is particularly useful for performing mass data processing operations and also for re-usable execution.

For more information, see Natural Operations, Batch Mode.

Natural Debugger

The Natural Debugger now supports multiple sources. Multiple source windows can be opened thereby providing a better overview and simplifying error searching.

For more information, see Natural Debugger.

Natural Remote Procedure Call

The following information applies to various aspects of the Natural Remote Procedure Call (RPC) facilities.

Support of EntireX Broker ACI Version 4

The support of EntireX Broker ACI Version 4 (Entire Broker Version 5.2) is required to activate the security exits and the code-page support of EntireX Broker.

Due to non-numeric conversion IDs on the client side (which were introduced with EntireX Broker ACI Version 3), EntireX Broker ACI Version 3 and above on the client side are not compatible with RPC servers of previous Natural versions (Version 2.3 on mainframe, Version 3.1 on other platforms).

As the RPC on the client side does not know the ACI version used by the RPC server, the new parameter ACIVERS has been added to the Natural parameter module. With ACIVERS, you can specify the version to be used.

Support of Code-Page Functionality

RPC servers and clients may specify the code page used in their local environment. For example, the client located on a UNIX computer may use an ASCII code page and the client on a mainframe computer may use an EBCDIC code page. The translation from one code page to the other is done by EntireX Broker.

The code page to be used by the RPC server or client is specified with the new Natural profile parameter CP.

The code-page functionality requires EntireX Broker ACI Version 4. For information on the code-page functionality, please refer to the EntireX Broker ACI documentation.

Support of EntireX Broker Functions LOGON and LOGOFF in RPC Servers

The support of the EntireX Broker functions LOGON and LOGOFF is required for compliance with the EntireX Broker.

With the support of LOGOFF, EntireX Broker will release internal data structures on request and not based on a time-out mechanism. In addition, this support will enable the EntireX Broker to run with the AUTOLOGON attribute set to OFF.

Support of Non-Numeric Conversation IDs

If the client which opens a conversation sets the EntireX Broker ACI version to 3 or above (with the ACIVERS parameter as described above), the EntireX Broker may generate a non-numeric conversation ID (format/length A16).

Therefore, any attribute settings which had to be made to avoid the generation of non-numeric conversation IDs in the EntireX Broker attribute file are now obsolete.

Authentification of the RPC Server

In Natural Security environments, the user ID and password are passed to the EntireX Broker if the subparameter SRVUSER of the NTRPC macro is set to "NSC".

Buffer Sizes

The maximum size of the send/receive buffer (parameter MAXBUFF) has been increased from 32 KB to 16 MB.

RPC Trace File

As default, old RPC trace files are deleted when a new file with the same name is created. If you wish to append the new log to the old one, specify >> filename.

Natural Performance Enhancements

Performance enhancements have been made in the following areas:

- output from Natural reports (I/O statement)
- access to Natural objects in the Natural buffer pool

Natural Programming Enhancements

The following programming enhancements are provided with Natural 4.1:

- Large and Dynamic Variables
- Optional Parameters
- Toggle of insert/overwrite in an input field

Large and Dynamic Variables

Natural Version 4.1 provides enhanced capabilities for the usage of large variables by removing the existing size limitations and by providing for dynamic allocation of these variables at execution time.

Large variables for alpha and binary data are based on the well known Natural formats A and B. The current limitations of 253 for format A and 126 for format B are no longer in effect. The new size limit is 1 GB.

In that the maximum size of large data structures (for example, pictures, sounds, videos) may not exactly be known at application development time, Natural additionally provides for the definition of alpha and binary variables with the attribute DYNAMIC. The value space of variables which are defined with this attribute will be extended dynamically at execution time when it becomes necessary (for example, during an assignment operation: #picture1 := #picture2). This means that large binary and alpha data structures may be processed in Natural without having to define a limit at development time.

The new Natural system variable *LENGTH can be used to obtain the number of bytes of the value space which are currently used for a given dynamic variable.

For performance optimization and also to prevent insufflicent memory problems, the new statements REDUCE and EXPAND have been iintroduced. If the dynamic variable space is no longer needed, the REDUCE DYNAMIC VARIABLE statement can be used to reduce the allocated space for the dynamic variable to zero (or any other desired size). If the upper limit of memory usage is known for a specific dynamic variable, the EXPAND statement can be used to set the used space for the dynamic variable to this specific size.

For more information, see Large and Dynamic Variables.

Optional Parameters

Natural Version 4.1 supports the use of optional parameters.

Parameters of subprograms and dialogs can be defined as optional (DEFINE DATA PARAMETER).

The statements which involve parameter transfer (CALLNAT, PERFORM, OPEN DIALOG, SEND EVENT, PROCESS GUI and SEND METHOD) now support optional parameters (nX notation).

The transfer of optional parameters can be checked by using the SPECIFIED clause in the logical condition criterion.

For more information, see DEFINE DATA PARAMETER and Optional Parameters (link needs to be added here).

Toggle of insert/overwrite in an input field

In input fields of the INPUT statement, it is possible to switch between overwrite and insert mode. This is comparable to the behaviour on UNIX. For more information, see INPUT statement.

New and Enhanced Natural Statements

The following table provides a summary of the new/enhanced Natural statements provided with Natural 4.1:

New Natural Statements	Description
CALLDBPROC and READ RESULT SET	CALLDBPROC invokes a stored procedure of the SQL database system. READ RESULT SET reads a result set which was created by a stored procedure.
EXPAND and REDUCE	Expands/reduces the size of the allocated memory for a dynamic variable.
Enhanced Natural Statements	
DEFINE WORK FILE	TYPE clause defines a work file type.
SET KEY	Support of keys PGUP and PGDN
CALL	INTERFACE4 option provides a new interface to 3GL programs.
DEFINE CLASS	The ACTIVATION clause defines the activation policy of the class.
CALLNAT, PERFORM, PROCESS GUI, OPEN DIALOG, SEND EVENT, SEND METHOD	Specify optional parameters (nX notation).
Logical Condition Criteria	SPECIFIED clause to check if optional parameters are transferred.

New and Enhanced Natural System Variables and System Commands

The following table provides a summary of the new/enhanced Natural system variables and Natural system commands provided with Natural 4.1:

New Natural System Variables	Description
*CPU-TIME	CPU time used by Natural process.
*DATV	Current date in format dd-mmm-yyyy
*DATVS	Current date in format ddmmmyyyy
*HOSTNAME	Name of the machine on which Natural is running.
*LENGTH(field)	The current length of valid data for a large dynamic data variable.
*NATVERS	Natural version string.
*NET-USER	User ID including domain name
*PARM-USER	Name of the parameter file currently in use
*PATCH-LEVEL	Natural patch level number as string value
*PID	Current process ID as string value
*SCREEN-IO	Screen input/output possible
*SERVER-TYPE	Server start-up type of Natural
*THIS-OBJECT	Enables an object to call its own methods.
New Natural System Commands	
LIST DIR	Displays detailed directory information about Natural objects.
LIST COUNT	Displays information about the number of objects in the current library.

New and Enhanced Natural Profile Parameters

The following new/enhanced Natural profile parameters are provided with Natural 4.1:

New Profile Parameters	Description
ACIVERS	Specifies the EntireX ACI version to be used.
AUTORPC	This parameter was formally called AUTOREMOTE.
BATCHMODE	Enable real batch mode
BMBLANK	Display trailing blanks (for batch mode only)
BMCONTROL	Display control characters (for batch mode only)
BMFRAME	Window frame characters (for batch mode only)
BMSIM	Simulate batch mode output (for batch mode only)
BMTIME	Display process time (for batch mode only)
BMTITLE	Display window title (for batch mode only)
BMVERSION	Display Natural version (for batch mode only)
CC	Error processing in batch mode (for batch mode only)
CMOBJIN	Batch output file for Natural INPUT data (for batch mode only)
CMPRINT	Batch output file (for batch mode only)
CMPRTnn	Additional report file name This parameter can only be used in batch mode and can be dynamically specified at Natural start-up.
CMSYSIN	Batch input file for Natural commands and INPUT data (for batch mode only)
CMWRKnn	Natural work file name. This parameter can only be used in batch mode and can be dynamically specified at Natural start-up.
СР	Specifies the code page to be used by the EntireX Broker
CVMIN	Control variable modified on input
ЕСНО	Control printing of batch input data (for batch mode only)
ENDMSG	Display session end message (for batch mode only)
NATLOG	Natural log file
RPCSIZE	This parameter was formally called SIZE.
TMPSORTUNIQ	Choose an alternate algorithm for generating sort work file names
TRANSP	TRANSP has new values in this version. This parameter has been changed in order to enable compatibility with the mainframe platform.

New and Enhanced Natural Utilities

The following new/enhanced Natural utilities are provided with Natural 4.1:

- SYSERR Utility
- SYSEXT Utility
- SYSOBJH Utility
- SYSTRANS Utility
- Additional Configuration Enhancements

SYSERR Utility

The SYSERR utility is now provided with a new GUI interface which permits easy and efficient entering and maintenance of error messages.

The SYSERR utility now also provides an import and export function (as currently provided by MSGGEN).

SYSEXT Utility

The SYSEXT utility has two new user exits:

- User exit USR2027N performs a wait interval.
- User exit USR2030N reads error tokens up to 253 bytes long.

SYSOBJH Utility

The new utility SYSOBJH (Object Handler) processes objects for the purpose of application distribution. This utility combines the functionality currently provided by the SYSPAUL and SYSTRANS utilities. The utilities SYSPAUL and SYSTRANS will be discontinued with the next Natural release

SYSOBJH can be used to unload objects in the source environment to work files and then load these objects from work files into the target environment. SYSOBJH can process Natural programming objects, resources, DDMs, error messages, Natural related objects, Natural command processors, external objects and Adabas FDTs.

Unloading and loading can be performed in internal format (as with the utility SYSPAUL), or in transfer format (as with the utility SYSTRANS).

Work files created with the utilities SYSPAUL and SYSTRANS can also be processed.

Work files created with SYSOBJH in transfer format can be processed by the utility SYSTRANS on all platforms.

SYSTRANS Utility

The following enchancements are provided with the SYSTRANS utility:

- With Natural Version 3.1, records written to work file 1 were written with a fixed length of 96 bytes. With Natural Version 4.1, they are written with a variable length of 12 to 96 bytes. This will reduce the size of the work file by approximately fifty percent.
- As a result of an inprovement in SYSTRANS internal processing, work file 3 is now used only if 'Selection List = Y' is specified online.
- The user exit TRA-E1-S (TRA-EX-1) has been expanded. For details see the source of TRA-E1-S.

Additional Configuration Enhancements

SQL Date/Time Conversion

A conversion table can now be specified via: Natural Configuration Utility > Global Config File > DBMS Assignment > SQL Date/Time Conversion. Date and time conversions will be performed based on the definitions provided in this conversion table.

Adabas Multi-Fetch Disabling

Multi-fetch processing can now be disabled explicitly for the Adabas commands L1, L2, L3 and/or L9 for each dbid/filenumber combination. This can be done via: Natural Configuration Utility > Global Config File > DBMS Assignment > Multi-Fetch Disabling.

New configuration parameter BPNLE

For more information on BPNLE, see Operations Environment section on the Natural Bufferpool in the Natural Operations documentation

Example Library for New Features

A new example library SYSEXV is available with Natural Version 4.1. This library replaces the previous example library SYSEXV31 and contains examples for both Version 3.1 and Version 4.1. Some examples in this library require Microsoft Developer Studio Version 6 for support of ActiveX controls.

You can view these examples by logging on to library SYSEXV and executing the program VERSION. You can then use the resulting menu to select the various example programs.

Please note that some examples make use of Office 97 (Word97, Excel97 and Visual Basic 6.0). Previous versions of these office products are no longer supported. Future Natural versions will only support the then current MS office products.

Compatibility / Removed Functionality

Applications created with Natural Version 3.1 can be executed with Natural Version 4.1 1 without any conversion or adjustments to Natural programs, except in the few cases of intentional minor incompatibilities as documented below.

When a Version 3.1 application is executed with Version 4.1, these incompatibilities will cause the application to produce better, but slightly different, results. If in these cases you wish to get the same results as with Version 3.1, you must adjust your Natural applications accordingly.

The following list provides an overview of the intentional incompatibilities as well as functionality no longer supported.

Topic	Intended Incompatibilty / Removed Functionality
Natural Execution using nde.exe	With Natural 4.1, the command 'natural.exe' is used to execute Natural. For batch mode execution, the command 'nde.exe' will also be permitted with Natural 4.1. With future releases of Natural, only 'natural.exe' will be permitted. This also is applicable for the Natural Runtime Version (natrun.exe).
Natural Help Execution	In that with Natural 4.1, a completely new HTML-based online help is provided, the previous online help file Natural.hlp is no longer provided.
Natural Parameter LANG	The Natural dynamic parameter LANG has been removed. The parameter ULANG should be used instead.
Natural Parameters SIZE and AUTOREMOTE	The Natural parameter SIZE has been renamed to RPCSIZE. The Natural parameter AUTOREMOTE has been renamed to AUTORPC. This was done to ensure consistency across all Natural platforms, and also for clearer direct association of these parameters with RPC.
Natural Parameter USEREP	The default for this parameter has been changed from ON to OFF. With Natural 4.1, you must set this parameter value to ON in order to cause Natural to use the NEW (Natural Engineering Workbench) repository.
Natural Work Files	Natural work files are closed automatically in the following cases: • a READ statement execution reaches end-of-file • a DEFINE WORK statement is executed

Topic	Intended Incompatibilty / Removed Functionality
New Error Message NAT0777	Error message NAT0777 will be returned if no contiguous memory is available in the buffer pool for loading a Natural object.
New Error Message NAT0967	Error message NAT0967 will be returned if any of the Natural statements FETCH, RUN, STOP or TERMINATE attempts to execute a method.
New Error Message NAT0968	Error message NAT0968 will be returned if a parameter which is defined as mandatory is not transferred.
Error Message NAT0300	Error message NAT0300 will be returned in case of data transfer incompatibility in method calls and property assignments instead of error message NAT6003.
Error Message NAT6149	Error message NAT6149 will be returned in case of locking conflicts instead of error message NAT6153.
NATLINK Support	NATLINK is no longer supported. The appropriate user exit (USExxx) should be used instead.
NaturalX Registration	The type libraries and registry files created during class registration are now stored in a separate directory for each class.
Dialog Source Format	The enhanced dialog source format is now the only format generated by Natural. However, the "CMNGE ('22C') format can still be read by the Dialog Editor.
WRITE PC COMMAND	This command will return error message 1183 if the file is already open or if the file type is not TRANSFER.

Migrating Applications to Version 4.1

The following should be considered when migrating Natural applications from Natural 3.1 to Natural 4.1:

- Bitmaps will still be found by Natural in the directory NATGUI_BMP. These bit maps should however be copied to the appropriate application library. Natural always searches the application library first and then NATGUI_BMP.
- Parameter settings need to be checked (SSIZE parameter) in order to use large Natural source.

Application Shell and Frame Gallery Usage

For the display of Application Shell Maintenance and Frame Gallery, the small font setting is recommended in the display driver. You can then modify the font attribute in generated dialogs to suit your application. If you modify the font attribute of the dialog, all controls within this dialog will inherit this setting.

Before using Application Shell and Frame Gallery, you must prepare the Adabas SAG-DEMO-DB. See the readme file in folder 'demodb' int he Natural version path for more information.

Start Application Shell from library SYSCOMP. Copy the application Z_TOP using Save As to define an application for the library in which you intend to use Frame Gallery.

Information Pertaining to Upcoming Natural Release

The following information pertains to functionality that will most likely not be supported in future Natural releases:

- Natural Execution Using nde.exe
- Omission of DBID/FNR within Context of FUSER
- CSCI Support
- EXECUTE and RUN Commands
- Statement Restrictions for RPC
- Parameter Name Changes
- Importing Objects

Natural Execution Using nde.exe

With Natural 4.1, the command 'natural.exe' is used to execute Natural.

For batch mode execution, the command 'nde.exe' will also be permitted with Natural 4.1.

With future releases of Natural, only 'natural.exe' will be permitted.

Omission of DBID/FNR within Context of FUSER

Natural currently allows a steplib without DBID/FNR defined in the context of FUSER. This will not be permitted in future Natural releases.

CSCI Support

CSCI will no longer be supported in future Natural releases.

EXECUTE and RUN Commands

For compatibility reasons, the next version of Natural will fully enforce the restriction that a library-id cannot begin with 'SYS'. The only exception to this restriction which will be allowed is the library-id 'SYSTEM'.

MSGGEN, SYSPAUL and SYSTRANS Utilities

The MSGGEN; SYSPAUL and SYSTRANS utilities will no longer be supported in future Natural releases.

The MSGGEN functionality is now provided in the SYSERR utility and the SYSPAUL and SYSTRANS functionality is now provided in the new utility SYSOBJH.

Statement Restrictions for RPC

The use of the following Natural statements is currently permitted but not recommended for remote procedure calls:

Statement	Explanation / Undesired Effects
TERMINATE	The server is terminated regardless of any conversations that may still be open.
FETCH, RUN, STOP	The server detects that it has lost its CALLNAT context and returns an error message to the client. However, the statement has already been executed by the server.
INPUT	Input data values are unpredictable when read from a file (and not from the Natural stack).

In order to prevent these undesired effects, the use of the above statements will be restricted so that it will no longer be possible to use them with RPC in future Natural releases.

Parameter Name Changes

- AUTOREMOTE has been renamed to AUTORPC.
- SIZE has been renamed to RPCSIZE.

The parameters SIZE and AUTOREMOTE are still valid in this version, however, they will no longer be available in future Natural releases.

Importing Objects

When importing an object into Natural, a backup copy is created if the file already exists in the SRC directory of the Natural library but is not registered in the FILEDIR.SAG. This functionality will no longer be provided in future Natural releases.

Known Problems

For information on problems that are known to Software AG, but have not yet been solved with this version of Natural, please refer to the section "Known Problems" in the README file supplied on the Natural installation CD-ROM.